

CLAIMS

1. An illumination device comprising:
a light emitting diode that emits a radiation pattern, wherein a maximum luminous
5 intensity of the radiation pattern is displaced relative to a center axis of the light emitting
diode; and
a number of light guides positioned to be illuminated by the light emitting diode,
each light guide positioned at offset locations relative to the center axis of the light
emitting diode.
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2. The illumination device of claim 1, wherein each light guide is positioned such
that a cross-sectional center of each light guide substantially corresponds to locations of
the maximum luminous intensity of the radiation pattern of the light emitting diode.
- 15 3. The illumination device of claim 2, wherein the locations of the maximum
luminous intensity of the radiation pattern of the light emitting diode are substantially
rotationally symmetric around the center axis of the light emitting diode.
- 20 4. The illumination device of claim 1, wherein the number of light guides includes
two light guides.
- 25 5. The illumination device of claim 1, further comprising a light guide fixture
formed to mate with the light guides, wherein the light guide fixture positions the light
guides at the offset locations relative to the center axis of the light emitting diode.
6. The illumination device of claim 5, wherein the light guide fixture is positioned
adjacent the light emitting diode.
7. The illumination device of claim 5, wherein the light guide fixture is a housing
30 that houses the light emitting diode.

8. The illumination device of claim 1, wherein at least one of the light guides provides directional side lighting in a first direction and wherein at least another of the light guides provides directional side lighting in a second direction.

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9. An illumination device comprising:

a light emitting diode that emits a radiation pattern, wherein a maximum luminous intensity of the radiation pattern is displaced relative to a center axis of the light emitting diode; and

10 at least one light guide positioned to be illuminated by the light emitting diode, the light guide positioned at an offset location relative to the center axis of the light emitting diode.

10. The illumination device of claim 9, wherein the light guide is positioned such that
15 a cross-sectional center of the light guide substantially corresponds to a location of the maximum luminous intensity of the radiation pattern of the light emitting diode.

11. The illumination device of claim 9, further comprising a light guide fixture
20 formed to mate with the light guide, wherein the light guide fixture positions the light guide at the offset location relative to the center axis of the light emitting diode.

12. The illumination device of claim 11, wherein the light guide fixture is positioned adjacent the light emitting diode.

25 13. The illumination device of claim 11, wherein the light guide fixture is a housing that houses the light emitting diode.

14. An illumination device comprising:

a light emitting diode that emits a radiation pattern wherein a maximum luminous intensity of the radiation pattern is displaced relative to a center axis of the light emitting diode;

- 5 a light guide fixture, the light guide fixture formed to mate with light guides,
a first light guide having a first end mated with the light guide fixture, wherein the first end of the first light guide is positioned at a first offset location relative to the center axis of the light emitting diode,
a second light guide having a first end mated with the light guide fixture, wherein
10 the first end of the second light guide is positioned at a second offset location relative to the center axis of the light emitting diode.

15 15. The illumination device of claim 14, wherein the first end of the first light guide is positioned such that a cross-sectional center of the first light guide substantially corresponds to a first location of the maximum luminous intensity of the radiation pattern of the light emitting diode, and

20 wherein the first end of the second light guide is positioned such that a cross-sectional center of the second light guide substantially corresponds to a second location of the maximum luminous intensity of the radiation pattern of the light emitting diode.

25 16. The illumination device of claim 15, wherein the first and second locations of the maximum luminous intensity of the radiation pattern of the light emitting diode are substantially rotationally symmetric around the center axis of the light emitting diode.

17. The illumination device of claim 15, wherein the light guide fixture is positioned adjacent the light emitting diode.

30 18. The illumination device of claim 15, wherein the light guide fixture is a housing that houses the light emitting diode.

19. The illumination device of claim 15, wherein the light emitting diode is a first light emitting diode and the light guide fixture a first light guide fixture, the illumination device further comprising:

5 a second light emitting diode that emits a radiation pattern wherein a maximum luminous intensity of the radiation pattern of the second light emitting diode is displaced relative to a center axis of the second light emitting diode;

a second light guide fixture, the second light guide fixture formed to mate with light guides,

10 wherein the first light guide has a second end mated with the second light guide fixture, wherein the second end of the first light guide is positioned at a first offset location relative to the center axis of the second light emitting diode, and

15 wherein the second light guide has a second end mated with the second light guide fixture, wherein the second end of the second light guide is positioned at a second offset location relative to the center axis of the second light emitting diode.

20. The illumination device of claim 19, wherein the first end of the first light guide is positioned such that a cross-sectional center of the first light guide substantially corresponds to a first location of the maximum luminous intensity of the radiation pattern of the first light emitting diode,

25 wherein the first end of the second light guide is positioned such that a cross-sectional center of the second light guide substantially corresponds to a second location of the maximum luminous intensity of the radiation pattern of the first light emitting diode,

30 wherein the second end of the first light guide is positioned such that a cross-sectional center of the first light guide substantially corresponds to a first location of the maximum luminous intensity of the radiation pattern of the second light emitting diode, and

wherein the second end of the second light guide is positioned such that a cross-sectional center of the second light guide substantially corresponds to a second

location of the maximum luminous intensity of the radiation pattern of the second light emitting diode.

21. The illumination device of claim 19, wherein the first light guide fixture is positioned adjacent the first light emitting diode, and wherein the second light guide fixture is positioned adjacent the second light emitting diode.

22. The illumination device of claim 19, wherein the first light guide fixture is a housing that houses the first light emitting diode, and wherein the second light guide fixture is a housing that houses the second light emitting diode.

23. The illumination device of claim 15, wherein the first light guide provides directional side lighting in a first direction, and wherein the second light guide provides directional side lighting in a second direction.

24. An illumination device comprising:
a light emitting diode that emits a radiation pattern, wherein a maximum luminous intensity of the radiation pattern is displaced relative to a center axis of the light emitting diode;
a number of light guides; and
means for positioning each light guide at offset locations relative to the center axis of the light emitting diode.

25. The illumination device of claim 24, further comprising means for positioning each light guide such that a cross-sectional center of each light guide substantially corresponds to locations of the maximum luminous intensity of the radiation pattern of the light emitting diode.

26. A sign comprising:

a frame;

a light emitting diode that emits a radiation pattern wherein a maximum luminous intensity of the radiation pattern is displaced relative to a center axis of the light emitting diode, wherein the light emitting diode is housed within the frame; and

a number of light guides positioned to be illuminated by the light emitting diode, each light guide positioned at offset locations relative to the center axis of the light emitting diode, wherein the frame is formed with holes and the each light guide protrudes through at least one of the holes.

27. The sign of claim 26, wherein each light guide is positioned such that a cross-sectional center of each light guide substantially corresponds to locations of the maximum luminous intensity of the radiation pattern of the light emitting diode.

28. The sign of claim 26, wherein the locations of the maximum luminous intensity of the radiation pattern of the light emitting diode are substantially rotationally symmetric around the center axis of the light emitting diode.

29. The sign of claim 26, wherein each light guide provides directional side lighting in a unique direction.

30. A sign comprising:

a frame;

a first light emitting diode that emits a radiation pattern wherein a maximum luminous intensity of the radiation pattern is displaced relative to a center axis of the first light emitting diode;

a first light guide fixture, the first light guide fixture formed to mate with light guides, wherein the first light emitting diode and the first light guide fixture are housed in the frame;

a first light guide having a first end mated with the first light guide fixture,
wherein the first end of the first light guide is positioned at a first offset location relative
to the center axis of the light emitting diode;

5 a second light guide having a first end mated with the first light guide fixture,
wherein the first end of the second light guide is positioned at a second offset location
relative to the center axis of the first light emitting diode;

a second light emitting diode that emits a radiation pattern wherein a maximum
luminous intensity of the radiation pattern is displaced relative to a center axis of the
second light emitting diode; and

10 a second light guide fixture, the second light guide fixture formed to mate with
light guides,

wherein the first light guide has a second end mated with the second light guide
fixture, wherein the second end of the first light guide is positioned at a first offset
location relative to the center axis of the second light emitting diode,

15 wherein the second light guide has a second end mated with the second light
guide fixture, wherein the second end of the second light guide is positioned at a second
offset location relative to the center axis of the second light emitting diode, and

wherein the frame is formed with holes and wherein the first and second light
guides pass through the holes.

20 31. The sign of claim 30, wherein the first and second light guides are positioned such
that a cross-sectional center of each light guide substantially corresponds to locations of
the maximum luminous intensity of the radiation pattern of each of the light emitting
diodes.

25 32. The sign of claim 31, wherein the locations of the maximum luminous intensity of
the radiation pattern of the light emitting diode are substantially rotationally symmetric
around the center axis of the light emitting diode.

33. A method comprising:

positioning a number of light guides next to a light emitting diode that emits a radiation pattern wherein a maximum luminous intensity of the radiation pattern is displaced relative to a center axis of the light emitting diode, each light guide being
5 positioned at offset locations relative to the center axis of the light emitting diode; and
illuminating the light guides with the light emitting diode.

34. The method of claim 33, further comprising:

10 positioning each light guide such that a cross-sectional center of each light guide
substantially corresponds to locations of the maximum luminous intensity of the radiation pattern of the light emitting diode.

35. A sign comprising:

a frame;

15 a light emitting diode housed within the frame;

a first light guide positioned to be illuminated by the light emitting diode, wherein the first light guide provides directional side lighting in a first direction; and

a second light guide positioned to be illuminated by the light emitting diode, wherein the second light guide provides directional side lighting in a second direction.

20 36. The sign of claim 35, wherein the frame is formed with holes and the each light guide protrudes through at least one of the holes.

25 37. The sign of claim 35, wherein the light emitting diode is a first light emitting diode, the sign further comprising a second light emitting diode housed within the frame, wherein the first and second light guides are positioned to be illuminated by the second light emitting diode.

30 38. The sign of claim 35, wherein the first and second light guides provide lighting in different colors.